

REMARKS

Claims 1-17 were examined in the Final Office Action mailed April 28, 2006, with claims 18-49 standing withdrawn pursuant to Election/Restriction Requirement.

Claims 1-17 continue to stand rejected under 35 U.S.C. § 103(a) as unpatentable over Dr. Beers' U.S. Patent No. 5,628,960 ("Beer '960").

Background: On September 28, 2006, the Applicants submitted a further Declaration by inventor Dr. Hans Beer, in which Dr. Beer described the details of the preparation of membranes by both a prior art process and the present invention's process. Dr. Beer further described the results obtained by the present invention. This September 11, 2006 Declaration supplemented a previous February 2, 2006 Declaration, in which Dr. Beer explained the fundamental difference between prior art membrane production processes and the present invention's novel new approach.

Specifically, Dr. Beer identified the prior state of the art, *i.e.*, the use of costly, highly refined membrane feedstock materials to form a membrane essentially free of contaminants ("filter dust"). Dr. Beer explained that such high-purity feedstocks were used because it was conventionally believed that it was essentially impossible to adequately remove filter dust from a wet membrane without unacceptably damaging the membrane. Dr. Beer then noted that in contrast to the conventional "purify before forming membrane" approach, the Applicants had succeeded in developing an "impurity removal *after* forming membrane" approach, in which a membrane is formed from less highly refined

(and thus significantly less costly) feedstocks. While this approach results in a membrane which initially contains more filter dust than a membrane formed from highly refined feedstocks, it was surprisingly discovered that the membrane could be satisfactorily be cleaned while the partially-dried membrane was still wet, contrary to the conventional belief that dust could not be removed from a wet membrane without unacceptable injury to the membrane.

Summary of the Pending Office Action: The December 12, 2006 Office Action identified two concerns with Dr. Beer's latest Declaration.

First, it is maintained that the claim 1 limitation "preparing a feedstock membrane from a cellulose membrane casting solution by phase inversion in an evaporation process" was not taught in the Declaration.

Second, it is stated that the Declaration teaches removal of dust by mechanical brushing while rinsing with water, and it is suggested that the claims be amended to be so limited, on the grounds that the results discussed in the Declaration may not be valid for other methods of removing filter dust impurities.

Amendment of the Claims: The Applicants have added new claim 50. This claim is based on claim 1, and adds the suggested mechanical brushing and water rinsing limitations.

**1. The Applicants Submit the Declarations Support Allowance of Claims 1-17.**

First Concern: With regard to the teaching of the recited membrane formation process, the Applicants respectfully note that at page 3 of his September 11, 2006 Declaration, Dr. Beer describes the recited membrane

formation process in paragraphs 6 and 7. Specifically, paragraph 6 describes the preparation of the “casting dope” from the refined and the unrefined feedstock materials, and paragraph 7 describes how the casting dope samples “were then cast ... by an evaporation process using a 100  $\mu\text{m}$  polyethylene terephthalate film support, with identical wet film thickness, environmental conditions and belt temperature and speed.”

The Applicants respectfully submit that those of ordinary skill in the art, (*i.e.*, artisans familiar with such membrane formation processes) would instantly recognize the above-described membrane formation process to be a process in which phase inversion occurs during evaporation, *i.e.*, the claimed preparation of a feedstock membrane “from a cellulose membrane casting solution by phase inversion in an evaporation process.” Accordingly, the Applicants respectfully submit that Dr. Beer’s September 11, 2006 Declaration is commensurate in scope with this portion of the claimed subject matter.

Second Concern: As to the newly-raised question of whether any specific technique for dust removal is valid, the Applicants respectfully submit that this is perhaps a “forest for the trees” matter, and respectfully request the Examiner reconsider the December 12, 2006 comments in light of the following remarks.

The Applicants note that Dr. Beer’s first declaration was submitted to rebut the Examiner’s initial position that the timing of removal of impurities (*i.e.*, before or after forming the membrane) was merely an optimization of a result effective variable. The Declaration was thus directed to establishing that the present invention (casting of a membrane from unrefined feedstocks and

subsequent removal of filter dust from the still-wet membrane) was a fundamentally different approach to the prior art's "purify-then-cast" approach. In the subsequent submissions, Dr. Beer has provided information further describing the process and the unexpected (and indeed, exemplary) results of the new approach: a membrane with superior test performance, produced with substantially lower cost feedstock materials.

With respect to the comments in the December 12, 2006 Office Action, the Applicants respectfully submit that the present invention is not distinguished from the prior art based on *how* filter dust is removed from a wet membrane (whether mechanical, liquid or gas impingement, or some combination thereof); it is distinguished by its fundamentally-different *approach* to membrane production, an approach that Dr. Beer's declarations show was not obvious to those of skill in the art. Accordingly, the Applicants submit that they should not be required to narrow the pending claims to only the one specific embodiment of wet membrane-dust removal techniques described in Dr. Beer's declarations, where one of ordinary skill – *after having learned of the new approach* – could readily determine a suitable cleaning scheme from the well-known mechanical, liquid and/or gas cleaning tools discussed in the Specification.

In view of the foregoing, the Applicants respectfully submit that Dr. Beer's declarations have provided more than sufficient support for the conclusion that the claimed process is non-obvious, as they have both identified the level of knowledge and expectations of those in the art (including the common belief that the present wet membrane filter dust removal was not practical), and identified

the unexpectedly superior results obtained by the novel reversal of the prior art approach (*i.e.*, purifying the membrane after formation, rather than purifying the feedstock before membrane formation). Because the primary question in this case is not *whether* various dust removal techniques can be used on a wet membrane (the recited mechanical, liquid, gas techniques being well known, and thus there should be no reasonable doubt as to whether they can be used to remove filter dust), the Applicants submit that the focus here should remain on the non-obviousness of the present invention's creation of a membrane *first formed from non-refined feedstock materials rather than relying on costly highly-purified feedstocks* – something more than adequately supported by the declaration evidence submitted in this case. Alternatively stated, the Applicants respectfully submit that they should not be required to perform and document a large number of membrane formation demonstration tests, documenting every possible combination of well known dust removal techniques, solely to obtain the claim coverage already supported by the original Specification and the submitted inventor declarations.

Based on the foregoing remarks, the Applicants respectfully request reconsideration and withdrawal of the pending § 103(a) rejection.

### CONCLUSION

The Applicants respectfully submit that claims 1-17 and 50 are allowable over the Beer '960 reference. Early and favorable consideration and issuance of a Notice of Allowance for these claims is respectfully requested.

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If there are any questions regarding this response or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket # 010743.50685).

Respectfully submitted,

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